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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/795,981	03/10/2004	Hisashi Nagata	1035-499	2189

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EXAMINER	
DUONG, THOI V	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/795,981	NAGATA ET AL.	
	Examiner	Art Unit	
	Thoi V. Duong	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-15,28,35-37 and 42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-15,28,35-37 and 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/520,609.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0305*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the Amendment filed March 14, 2005.

Accordingly, claims 9, 12 and 14 were amended, claims 1-8, 16-27, 29-34 and 38-41 were cancelled, and new claim 42 was added. Currently, claims 9-15, 28, 35-37 and 42 are pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 9-15, 28 and 35-37 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 35 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 36 recites the limitation "the signal line and the storage capacitor electrode are fabricated from a same material in a single patterning" which was not described in the specification. According to Figs. 17 and 25, either "the signal line 11 and the storage capacitor common wire 14" or "the scanning line 12(21) and the storage capacitor electrode 41" are fabricated from a same material in a single patterning. However, the Examiner will interpret the limitation as "the

scanning line and the storage capacitor electrode are fabricated from a same material in a single patterning."

Claims 36 and 37 are also rejected since they are dependent on claim 35.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 12 recites the limitations "the scanning line and the storage capacitor electrode are fabricated from a same material in a single patterning" and "the signal line, the pixel electrode, and the storage capacitor common wire are fabricated of the same material in a single patterning." It is unclear if the scanning line, the storage capacitor electrode, the signal line, the pixel electrode, and the storage capacitor common wire are fabricated of the same material or they are fabricated in a single patterning or they are fabricated of the same material in a single patterning. The specification does not disclose that the scanning line, the storage capacitor electrode, the signal line, the pixel electrode, and the storage capacitor common wire are fabricated of the same material in a single patterning.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application

by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 9-13 and 42 are rejected under 35 U.S.C. 102(e) as being anticipated by Jung Mok et al. (Jung Mok, USPN 5,923,390).

Re claim 9, as shown in Figs. 4-6, Jung Mok discloses an active matrix substrate, comprising:

a pixel electrode 87(93) provided in a pixel area;

a scanning line 60 and a signal line 70;

a switching element electrically connected to the scanning line 60, the signal line 70, and the pixel electrode 87(93),

a storage capacitor electrode 81b for a storage capacitor; and

a storage capacitor common wire 91 disposed parallel to the signal line so as to be electrically connected to the storage capacitor electrode 81b, wherein

storage capacitance is provided between the pixel electrode 87 and the storage capacitor electrode 81b,

the scanning line 60(81a) and the storage capacitor electrode 81b are fabricated from a same material in a single patterning (col. 6, lines 1-6); and

wherein the storage capacitor electrode 81b and the storage capacitor common wire 91 are pattemed in different steps so as to have an insulating film 82 provided partially therebetween (col. 8, lines 18-23).

Re claims 10, 12 and 42, the signal line 70 and the pixel electrode 87 and the storage capacitor common wire 91 are fabricated from a single conductive layer through patterning thereof (col. 6, lines 23-30).

Re claim 11, the active matrix substrate of Jung Mok further comprises an interlayer insulation film 92 on which the pixel electrode 93 is provided.

Re claim 13, the active matrix substrate of Jung Mok further comprises a gate insulating film 82 for covering a gate electrode 81a of the switching element TFT, wherein the pixel electrode 87 is disposed opposing the storage capacitor electrode across the gate insulation film 82.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 14, 15 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jung Mok et al. (Jung Mok, USPN 5,923,390) in view of Oh et al. (Oh, USPN 6,211,928 B1).

Re claim 14, as shown in Figs. 4-6, Jung Mok discloses an active matrix substrate, comprising:

a pixel electrode 87(93) provided in a pixel area;

a scanning line 60 and a signal line 70;

a switching element electrically connected to the scanning line 60, the signal line 70, and the pixel electrode 87(93),

a storage capacitor electrode 81b for a storage capacitor; and

a storage capacitor common wire 91 disposed parallel to the signal line so as to be electrically connected to the storage capacitor electrode 81b, wherein

storage capacitance is provided between the pixel electrode 87 and the storage capacitor electrode 81b,

the scanning line 60(81a) and the storage capacitor electrode 81b are fabricated from a same material in a single patterning (col. 6, lines 1-6); and

a protection film 92 for covering the switching element.

Jung Mok discloses an active matrix substrate that is basically the same as that recited in claim 14 except for an interlayer insulation film interposed between the pixel electrode and the protection film.

As shown in Fig. 8J, Oh discloses an active matrix substrate comprising a protection film 126 (passivation film), a pixel electrode 104, and an insulation film 156 (planarization film) interposed between the pixel electrode 104 and the protection film 126.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the active matrix substrate of Bae with the teaching of Oh by forming an interlayer insulating film interposed between the pixel

electrode and the protection film to obtain a smooth surface profile and improve aperture ratio (col. 6, lines 53-59).

Re claim 15, as shown in Fig. 8J, a contact hole is formed through the interlayer insulation film 156 and the protection film 126 so as to electrically connecting the pixel electrode 104 to the switching element.

Re claim 28, as shown in Fig. 8J, Oh discloses that the scanning line 117a is anodized to form an anodized film 135 to prevent hillocks and improve electrical insulation (col. 5, lines 9-12).

11. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jung Mok et al. (Jung Mok, USPN 5,923,390) in view of Jeromin et al. (8.4: Application of a-Si Active-Matrix Technology in a X-Ray Detector Panel).

Re claim 35, as shown in Figs. 4-6, Jung Mok discloses an active matrix substrate, comprising:

a pixel electrode 87(93) provided in a pixel area;

a scanning line 60 and a signal line 70;

a switching element electrically connected to the scanning line 60, the signal line 70, and the pixel electrode 87(93),

a storage capacitor electrode 81b for a storage capacitor; and

a storage capacitor common wire 91 disposed at least partially parallel to the signal line so as to be electrically connected to the storage capacitor electrode 81b, wherein

the scanning line 60(81a) and the storage capacitor electrode 81b are fabricated from a same material in a single patterning (col. 6, lines 1-6); and

wherein the storage capacitor electrode 81b and the storage capacitor common wire 91 are pattemed in different steps so as to have an insulating film 82 provided partially therebetween (col. 8, lines 18-23).

Re claim 36, Jung Mok further discloses a gate insulation film 82 for covering a gate electrode 81a of the switching element; and a conductive body layer 87 deposited on the gate insulation film 82 so as to be connected to the switching element, wherein

the storage capacitor electrode 81b and the conductive body layer 87 constitute the storage capacitor across the gate insulation film.

Jung Mok discloses an active matrix substrate that is basically the same as that recited in claim 34 except for an image sensor comprising a conversion section for converting incident magnetoelectric radiation to electric charges and bias voltage application means for causing a storage capacitor to store the electric charges.

In "Application of a-Si Active-Matrix Technology in a X-Ray Detector Panel" cited by Applicant, Jeromin discloses an active matrix substrate used in X-ray detector panel comprising amorphous selenium which converts x-ray photons into charge carrier pairs. Jeromin also discloses that the positive charges are collected in the storage capacitors of the pixels and are then read out charge amplifiers connected to the source lines (see Abstract). Accordingly, a conversion section for converting incident magnetoelectric radiation to electric charges and bias voltage application means for causing a storage capacitor to store the electric charges are to be employed in the X-Ray detector panel.

Since the active matrix substrate of Jung Mok provides high aperture ratio without decrease in storage capacitance (Jung Mok, col. 2, lines 32-34), as intended purpose, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the active matrix substrate of Jung Mok in the image sensor of Jeromin comprising a conversion section for converting incident magnetoelectric radiation to electric charges and bias voltage application means for causing a storage capacitor to store the electric charges for obtaining the actual x-ray image (page 93, col. 2).

12. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jung Mok et al. (Jung Mok, USPN 5,923,390) in view of Jeromin et al. (8.4: Application of a-Si Active-Matrix Technology in a X-Ray Detector Panel) as applied to claims 35-37 above and further in view of Oh et al. (Oh, USPN 6,211,928 B1).

Jung Mok as modified in view of Jeromin above includes all that is recited in claim 38 except for the scanning line being anodized.

As shown in Fig. 8J, Oh discloses that the scanning line 117a is anodized to form an anodized film 135 to prevent hillocks and improve electrical insulation (col. 5, lines 9-12).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the active matrix substrate of Jung Mok with the teaching of Oh by anodizing the scanning line to prevent hillocks and improve electrical insulation (col. 5, lines 9-12).

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong

05/24/2005

TARIFUR R. CHOWDHURY
PRIMARY EXAMINER